



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification <sup>7</sup> : <b>A61B 17 /56</b>	<b>A2</b>	(11) International Publication Number: <b>WO 00/03653</b> (43) International Publication Date: 27 January 2000 (27.01.00)
<p>(21) International Application Number: PCT/US99/15825</p> <p>(22) International Filing Date: 14 July 1999 (14.07.99)</p> <p>(30) Priority Data: 09/114,996 14 July 1998 (14.07.98) US</p> <p>(71) Applicant: THEKEN SURGICAL, LLC [US/US]; 1100 Nola Avenue, Barberton, OH 44203 (US).</p> <p>(72) Inventors: THEKEN, Randall, R.; 1100 Nola Avenue, Barberton, OH 44203 (US). EISERMANN, Lukas; 2490 East 126th Street, Cleveland, OH 44120 (US). TAYLOR, Ben; The Farmhouse, Marshcroft Lane, Tring, Hertfordshire HP23 5QN (GB).</p> <p>(74) Agent: JAFFE, Michael, A.; Arter &amp; Hadden LLP, 1100 Huntington Building, 925 Euclid Avenue, Cleveland, OH 44115 (US).</p>	<p>(81) Designated States: AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, DE, DK, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SL, TJ, TM, TR, TT, UA, UG, UZ, VN, YU, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).</p> <p><b>Published</b> <i>Without international search report and to be republished upon receipt of that report.</i></p>	

(54) Title: BONE FIXATION SYSTEM

## (57) Abstract

An internal bone fixation system for the treatment of bone anomalies, such as thoraco-lumbar spinal instability. In accordance with a preferred embodiment, the fixation system includes a plate anatomically contoured to match the profile of lateral aspects common to thoracic and lumbar vertebrae, as well as the anterior profile. The contour of the plate allows for quicker implantation time, a lower profile, and a fit which allows for biomechanical load-sharing which increases the mechanical properties of the construct (i.e., stiffness, strength, and fatigue life). Moreover, the fixation system includes a fastener screw-plate interface which forces proper alignment between fastener screws and the plate, provides "pull-out" resistance and evenly distributes stresses on both the screw and the plate. Ledges are located on the medial surface at either end of the plate. The fixation system also includes set screws which effectively turn the screw construct into a bolt construct.

